FF 220T Setup Guide

This setup guide contains installation information about the Extron® FF 220T Flat Field® speaker. This speaker is designed for use in plenum rated ceiling spaces and can be dropped into a standard 2' x 2' or 2' x 4' (with supplied cross bars) false ceiling tile space on a T-bar grid.

CAUTION: Installation and service must be performed by authorized personnel only.

IMPORTANT:
Refer to www.extron.com for the complete user guide and installation instructions before connecting the product to the power source.

Factors to Consider Before Installation

- Installation of conduit and conduit adapters must conform to all applicable building codes and local ordinances.
- Installation in a plenum-rated environment requires a wire gauge of 12 AWG to 18 AWG. Conduit may be required.

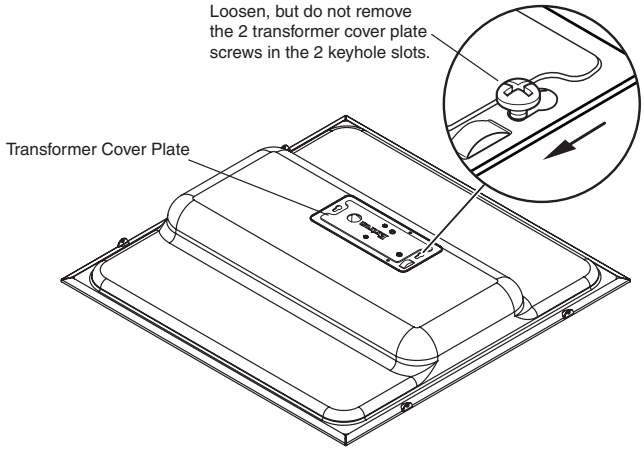
  NOTE: If daisy chaining speakers in 70 V or 100 V configuration, maximum wire gauge is 16 AWG.
  If daisy chaining speakers in direct (8 ohm) configuration, maximum wire gauge is 14 AWG.

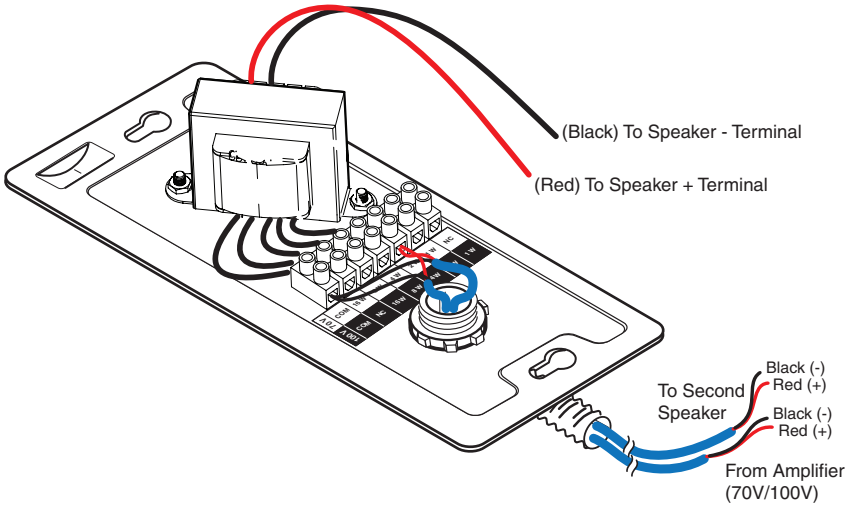
- If using seismic supports, the installer provides the cables.
- Wiring connections depend on whether or not a distributed (70 or 100 volt) audio system is installed with these speakers.

Installation

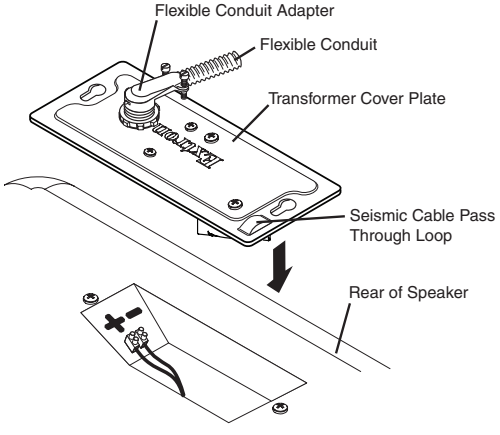
Initial Steps

1. Power down all attached devices before proceeding.
2. Remove the 2' x 2' ceiling tile where the FF 220T will be installed. If the ceiling has 2' x 4' tiles, cut the tile in half.
3. Loosen, but do not remove, the two screws on the top terminal cover plate as shown on right.
4. Slide and remove the terminal cover plate, which is installed with the transformer side down. See below.





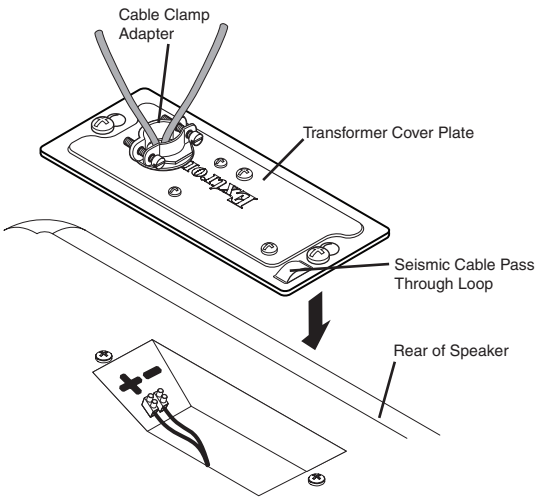
5. When using flexible conduit, insert the conduit into the cover plate opening using an appropriate conduit adapter and secure the conduit to the plate. See right.



When using speaker wires without a conduit, secure the cable clamp adapter (included) to the cover plate and insert the wires through the clamp. See right.

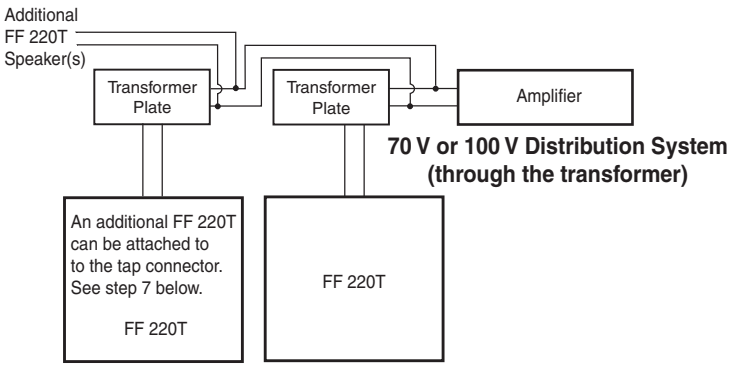
6. Proceed to steps **7** or **9** for the appropriate wiring instructions either for a distributed audio system (70 V or 100 V line distribution through the transformer) or for a direct connection from an amplifier (bypassing the transformer).

NOTE: In the 70 V or 100 V distribution system block diagram below, an optional speaker has been added as an example of daisy chaining FF 220T speakers to a single amplifier output.



Installation in a 70 V or 100 V Audio Distribution System (through the transformer)

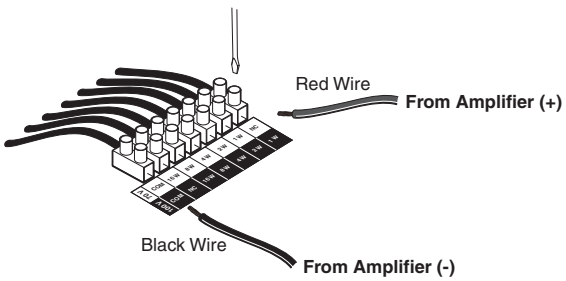
7. Connect cables from the amplifier to the transformer on the FF 220T terminal cover plate.
   - **a.** Pull the wires from the amplifier through and out of the conduit, if a conduit is used.
   - **b.** Route the two wires from the amplifier through the cover plate hole to the transformer side.
   - **c.** Strip 3/16" (5 mm) from the wire ends and keep the wire end strands together by twisting them. Do not tin the wires.
   - **d.** Secure the wires to the appropriate taps on the captive screw connectors of the 7-connector terminal block (on the transformer side of the cover plate) as indicated on the tap label. See the note below. The black, negative (-) wire attaches to the "COM" terminal, and the red, positive (+) wire attaches to the desired terminal tap. See the diagram at right.


Additional FF 220T Speaker(s)
Transformer Plate
Transformer Plate
Amplifier
An additional FF 220T can be attached to to the tap connector. See step 7 below.
FF 220T
FF 220T

70 V or 100 V Distribution System (through the transformer)

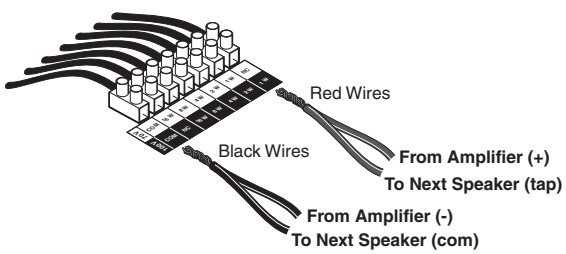
NOTE: Observe the 70 V or 100 V system designation as indicated on the tap label.

70 V	COM	16 W	8 W	4 W	2 W	1 W	NC
100 V	COM	NC	16 W	8 W	4 W	2 W	1 W



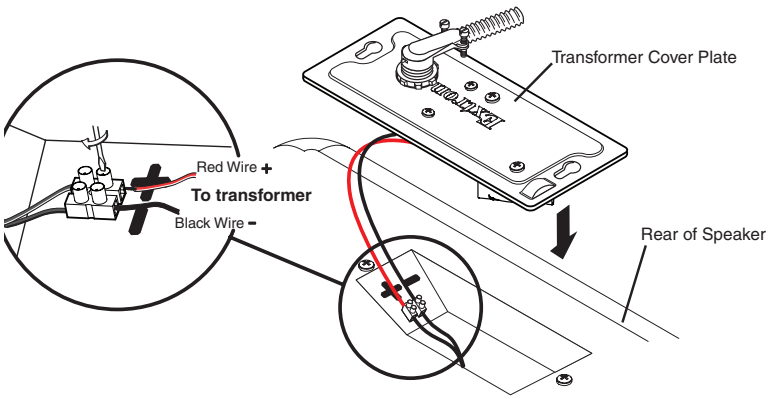
Wiring to a Single Speaker

   - **e.** Use a small flat blade screwdriver to tighten the terminal block screws.
   - **f.** To wire additional speakers, route speaker wires from the second speaker through the cover plate hole to the transformer side, and twist the black negative (-) wires together and twist the red positive (+) wires together before inserting them into the terminal block. Additional speakers can be daisy chained this way. See the diagram at right.



Wiring to Multiple Speakers

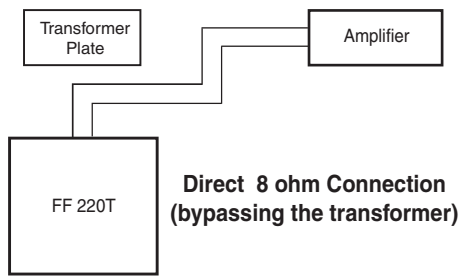
8. Connect wires from the transformer to the speaker.
   a. Keep the wire strands together by twisting them (do not tin the wires).
   b. Connect the red positive (+) wire to the + speaker terminal and connect the black negative (-) wire to the - speaker terminal as shown below.



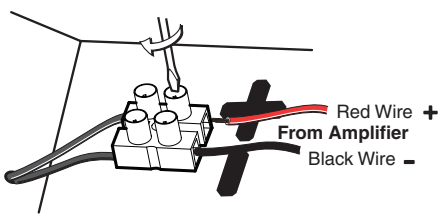
   c. Proceed to step **10**.

Installation with Direct 8 ohm Connection to an Amplifier (bypassing the transformer)

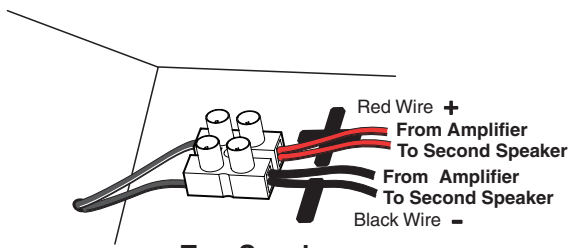
9. See the block diagram on the right.
   a. Route the wires from the amplifier to the speaker using the same procedure for routing speaker wire (and conduit if applicable) through the cover plate as described in step 5. Strip 3/16 inch (5 mm) from the ends of the 2 speaker wire leads (+ and -) coming from the amplifier. Keep the wire strands together by twisting them (do not tin the wires), and secure the wires to the input terminals of the speaker while observing the correct polarity.
   b. Connect the red positive (+) wire to the + speaker terminal and connect the black negative (-) wire to the - speaker terminal depending on whether one or two speakers are being connected as shown below.



Direct 8 ohm Connection (bypassing the transformer)



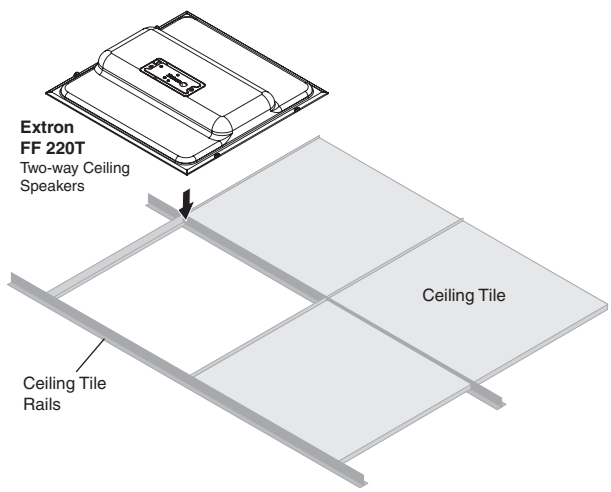
One Speaker



Two Speakers

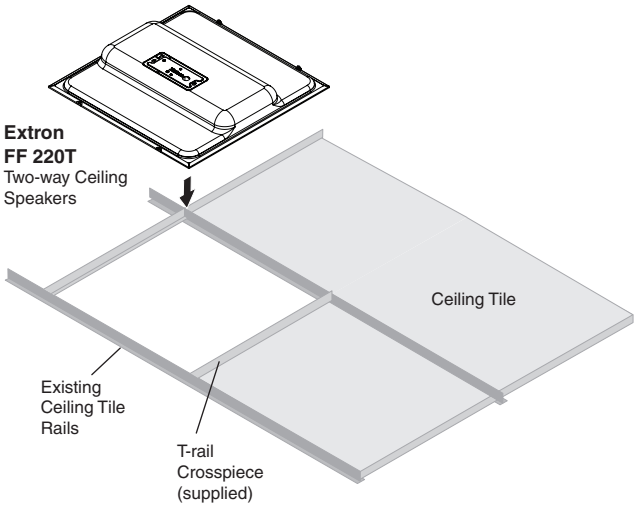
Finishing Steps, All Installation Types

10. Replace the transformer cover plate and tighten the two cover plate screws that were loosened in step 3.
11. Temporarily test the system and speakers by powering on the amplifier and listening for the correct response from the speakers, then disconnect power from the amplifier.
12. For installation in a 2′ x 2′ ceiling tile, remove a tile and place the speaker on the existing support rails as shown on the right.



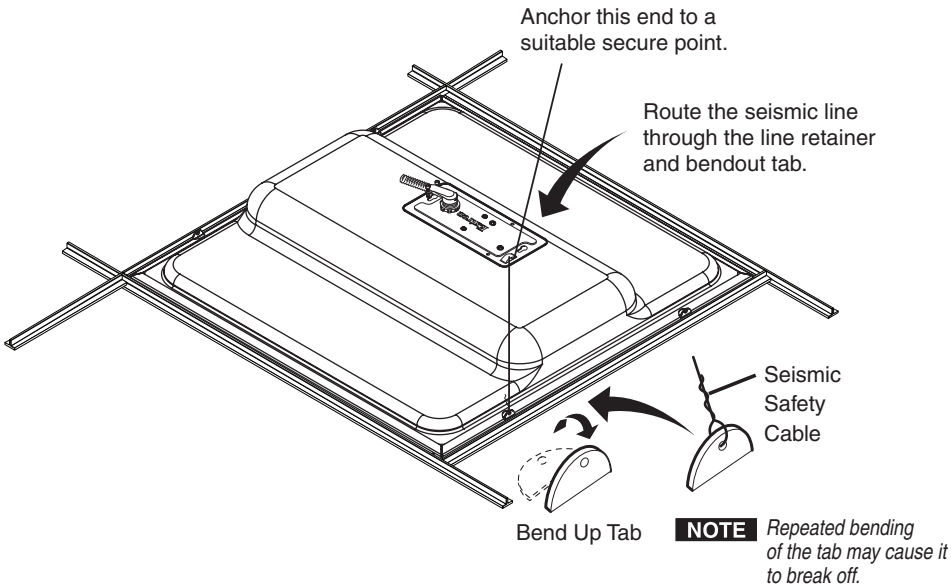
For installations in a 2′ x 4′ ceiling tile (which was cut in half in step **2**), install the supplied T-rail crosspiece as shown on the right.

Set the speaker in place in the ceiling and position it so that the speaker edges are hidden by the support rails or T-rails.



13. If seismic support lines are being used, install them. See the illustration below.

> **NOTE:** Observe all applicable building codes and local ordinances when installing the speaker.



a. Temporarily remove a ceiling tile adjacent to the speaker and set it aside.

b. Connect a seismic support cable through the cable pass through loop, and attach it to one of the seismic bendout tabs located on either side of the speaker.

c. Attach the other end of the cable to a sturdy part of the building (studs, roof struts, and the like).

d. For additional support lines repeat as needed. Refer to the *FF 220T User Guide* for further details.

e. Replace the ceiling tile removed in step **13a**.

14. Check all wiring before powering up the amplifier.

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